An

Inaugural Essay,

on the

Varioloid Epidemic

which prevailed at Wilmington, Delaware, in the years 1827 & 1828,

For

The Degree of Doctor of Medicine,

in

The University of Pennsylvania.

Passed March 7. 1829

By

Henry Gibbons

of Delaware.

regard
rendered
an impro
value i
Before
therefore

in the Pro
than comm
succession
general op
full at 70
years mit

The imperfect state of our knowledge, in regard to the influence of Climate upon Epidemic diseases, renders an account of the weather, during its prevalence, an important part of the history of an Epidemic. Of equal value is a sketch of the preceding and coexisting complaints. Before entering on the subject proper to my Essay, I will therefore bestow some attention upon these circumstances.

The period of time from 1820 to 1827, was marked in the northern part of Delaware, by a smaller quantity of rain than common, especially in the summer months; and by a succession, with few exceptions, of mild open winters. It is the general opinion among the older inhabitants, that less rain fell at Wilmington, during that time, than in any other seven years within their recollection. Springs and wells gave out

in the
to fail.
: tent, a
in high
more th
few ca
general
- or, if
in the
there wa
except th
of the s
approach
Throughe
was the
widely pr
varioloid
for a tim
hardly be

in the latter part of the period, that had never been known to fail. In 1824, '25, and '26, the Epidemic bilious remittent, and intermittent fever, was most rife, and prevailed in high, as well as in low, situations. The year 1827 was more healthy than usual, particularly in the fall, when few cases of autumnal fever occurred. Varicella, the general precursor of Variloid, did not make its appearance, — or, if at all, not until that disease had become Epidemic, in the winter of 1827, '28. In the course of this winter, there was nothing remarkable in the concomitant diseases, except that almost every case was attended by eruptions of the skin; — a fact, still more strikingly observed, on the approach of Spring, during the prevalence of Rubeola. Throughout the summer of 1828, the alimentary canal was the chief seat of disease, Diarrhoea and Cholera being widely prevalent. Towards the end of the 6th. month, when Variloid was most extensive, Dysentery was not uncommon for a time, but soon disappeared: — a disease that has hardly been observed at Wilmington, for a number of years.

In the
accur

men of
not exce
weather
attention
close of
referring
which
that the
the Mes
other m
chiefly
in which
its prem

following
Thunder

In the Fall ensuing, the Autumnal Fever made its accustomed visitation.

The extension of the Varioloid Epidemic, in the Summer of 1828, (after it had once subsided) in a degree equalling, if not exceeding, the previous winter; and the extreme heat of the weather, at the same time, - are circumstances worthy of attention. The disease was most predominant, about the close of the 6th, and the beginning of the 7th. month. By referring to the Meteorological Journal for these months, which I have thought proper to give complete, it will be seen that the weather at this time was excessively warm [Indeed, the Mean Temperature of the former, was higher than of any other month in the year]. My remarks on the Epidemic, are chiefly from observations during the Summer Campaign, in which it was not observed to differ in any respect, from its previous accession.

The mean monthly temperature given in the following tables, is calculated from two observations of the Thermometer, daily; one, about Sun-rise, the other at the

manuest f
three clas
ly accom
N.B. to S.B
and also f
In the Sec
importan

warmest part of the day. I have divided the winds into three classes; - the first of which from N. and N.W. is general- ly accompanied by dry and cool weather; - the second, from N.E. to S.E. mostly damp; - and the third, from S. to W., warm, and also frequently attended by rain, especially in Winter. In the Second Table, when there have occurred rains of importance, the quantity is specified.

months	
1	29
2	35
3	44
4	55
5	60
6	67
7	74
8	73
9	64
10	56
11	41
12	34
	53

months	
1	34
2	39½
3	41½
4	45
5	62
6	73¼
7	74½
8	73¼
9	64½
10	50
11	44
12	38½
	53¼

1827

Months	Mean Temperature	Coldest Extreme	Warmest Extreme	N.W. winds	Easterlies	S.W. winds	Clear Days	Cloudy Days
1	[illegible]	[illegible]	[illegible]	12	[illegible]	12	13	[illegible]
2	35.4	[illegible]	[illegible]	[illegible]	6	[illegible]	[illegible]	[illegible]
3	44	24	[illegible]	[illegible]	6	[illegible]	[illegible]	[illegible]
4	55.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	68	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	56	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	3	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	111	[illegible]	[illegible]	[illegible]	156

1828

Months	Mean Temperature	Coldest Extreme	Warmest Extreme	N.W. winds	Easterlies	S.W. winds	Clear Days	Cloudy Days
1	[illegible]	[illegible]	[illegible]	[illegible]	11	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	56	[illegible]	[illegible]	10	18	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	28	63	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	3	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

| | | |

[illegible] the disease [illegible] in the [illegible] and vaccinated individuals [illegible] [illegible] [illegible] in Scotland in the summer of 1[illegible] but did not [illegible] [illegible] a pandemic until towards the close of that year. It became epidemic in Edinburgh and [illegible] in this case in Great Britain and spread outwards in many parts of Europe. In the year succeeding it appeared for the first time in this country in Boston in the state of Massachusetts and subsequently at Baltimore, Philadelphia, Wilmington and other places.

At Wilmington, the inoculations were [illegible] commenced in the Winter of 1827-28, which was followed by its appearance in the autumn. From the close of 1823, measures were taken to ascertain and the unprotected inhabitants in the town and vicinity. Now this town was nearly completely surrounded by a wall and secured, and at the same time it was set in the Poor house adjacent to the town, but it was limited in its extent and attached none but unprotected

cessors. With these few cases the disease ceased not to reappear for long years. Notwithstanding the free and daily communication with the infected city, distant 16 miles, not a single case of varicous disease occurred during this period, in a population of 700 souls. Still more a similar circumstance was witnessed in the winter of 1829-30 when the small pox showed itself and was fatal in several instances, until its career was cut short by a general vaccination. In 1832, it again broke out in the same city and threatened to become general; but vaccination was again resorted to with the best happy result. These facts as these certainly afford strong evidence in favour of the protecting virtue of vaccination against the dis-ordered, morbid, or the disease unconnected with a state of atmosphere favorable to the infection or whatever was enabled at other times to transcend its long-accustomed bounds.

The first case of an intro-fever in Pennington occasioned to its general prevalence was in the latter part

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Of [illegible] [illegible] among the vaccinated in the same neighborhood only one was pitted, and this one more [illegible] from a variola which occurred on the [illegible] day of the disease. In only one instance was there any variation in the vaccinia from the usual appearance [illegible], and hence the vaccinia received throughout [illegible] to variola in the [illegible] like the [illegible] vaccine.

The same subject [illegible] [illegible] [illegible] [illegible] *[illegible]* [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] in the [illegible] [illegible] [illegible] [illegible] [illegible] and [illegible] [illegible] [illegible] the [illegible] testimony of [illegible] [illegible] view of the [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] attack of the [illegible] [illegible] [illegible] [illegible] contracted [illegible] [illegible] in the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] vaccination. But [illegible]

[illegible] first of [illegible] [illegible] occurring the natural small pox. A young woman whose home was in the country [illegible] had been vaccinated ten years before spent part of a day at the house and was attacked by the disease on the eleventh day after her return to the country [illegible] the unprotected [illegible] though constantly exposed [illegible] entire immunity [illegible] [illegible] attempt to [illegible] to the evidence of the [illegible]."

The accompanying [illegible] illustrate [illegible] the [illegible] in the Evidence; — the [illegible] immunity of [illegible] vaccinated [illegible] to the evidence of the infection [illegible] [illegible] in **mony** [illegible] [illegible] than the unvaccinated. [illegible] an unvaccinated individual [illegible] the greater [illegible] the [illegible] through the [illegible] vaccinated [illegible] attempts to [illegible] the [illegible] the vaccinated [illegible]

was the last to submit to its influence, the remaining few being attacked one after the other. [illegible] of the vaccinated were attacked whose only exposure [illegible] must have been while visiting the street. No constant relation was observed between this extreme susceptibility to the disease and its severity.

[illegible] met with one case where the [illegible] and in some measure declined in the 7th month [illegible] [illegible] a number of other [illegible] or [illegible] [illegible] evidently incapable of propagating the disease [illegible] 2d. vaccinated [illegible] and afterwards [illegible] [illegible] [illegible] and [illegible] [illegible] [illegible] [illegible] with frequent intermissions [illegible] [illegible] as the case [illegible] the [illegible] the [illegible] gave way to a [illegible] [illegible] the [illegible] and [illegible] [illegible] of the [illegible] of the [illegible] [illegible] filled with yellowish serum. [illegible]

[illegible]

[illegible]

[illegible]

[illegible] and under the same circumstances the nurse [illegible]

was attacked. The two varieties [illegible]

[illegible] in one family [illegible]

[illegible] illustration of the same.

They fell under my notice in the [illegible] month 1830 [illegible] young

women [illegible] 20 years [illegible] inoculated [illegible],

contracted the disease in some unknown way and was

surrounded [illegible] in the family, consisting of

[illegible] inoculated than sometimes

children [illegible] been all vaccinated in infancy [illegible]

[illegible] about the [illegible]

[illegible] attacked; and [illegible] the disease

was [illegible] at the time of vaccination was

[illegible]. In another family of seven children between

the ages of [illegible] and 20 vaccinated when very young they were

attacked all [illegible] except one [illegible]

[illegible], accompanied with secondary fever.

In one [illegible] about 20. [illegible]
[illegible] 20 [illegible]

Small children [illegible] vaccinated [illegible], the [illegible]

[illegible]

On the other hand instances occur in which,
[illegible]
[illegible]
[illegible]

[illegible]

[illegible] Medical Lectures p. [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

to spread about the time of the dying away of the preceding one. I have some instances of this kind are recorded by [illegible] [illegible] in his statement.

The [illegible] [illegible] in the Epidemic among the vaccinated during the [illegible], which is the [illegible] of [illegible] is variously estimated by different [illegible]. But it certainly was not many, except in Philadelphia and some other [illegible] [illegible] [illegible] the [illegible] statements in this respect with the [illegible] [illegible] [illegible] [illegible] of [illegible] the [illegible] rates [illegible] to have been about one in [illegible]. There was no well attested instance of death among the protected.

Some facts seem to tend to [illegible] [illegible] [illegible] [illegible] found [illegible] [illegible] by; that vaccination operates in many cases only a temporary protection; in other words that it wears out of the system. In my own experience, of [illegible] [illegible] [illegible] there was not a single very severe attack in a patient under [illegible] years [illegible] [illegible] undergone the genuine [illegible]. The observation of several physicians testifies to the same fact as regards their practice. Only some of the [illegible]

abovementioned were younger than 2 years and 4 were between the ages of 5 and 25. Seven of these were very severe cases. Three of these were attended with secondary fever and considerable danger. In five cases the constitutional [illegible] including two of the cases which were dangerous vaccination was then performed by careful [illegible] and the [illegible] were very distinct and apparently genuine.

Being [illegible] [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of 653 cases of Varioloid [illegible] among the [illegible] [illegible] [illegible] [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. When we reflect that vaccination is [illegible] performed [illegible] we cannot but see that the [illegible] [illegible] [illegible] strong evidence of the [illegible] [illegible] [illegible]. Supposing related [illegible] [illegible] of the same [illegible] [illegible] that 3 of them had been vaccinated [illegible] months.

of the [illegible] [illegible] [illegible]

[illegible] but on examination [illegible] marks of either could be found. Vaccination was a [illegible] now, recorded, with more [illegible]. On the next day the vesicle had [illegible] but the [illegible] was [illegible] other, in fact, [illegible] opinion assented readily to vaccination in the right arm. At the time it had every appearance of natural small pox, but immediately began to decline without secondary fever; or that in another week, the scabs were falling off, and [illegible] was ready for [illegible]

[illegible] Doctor [illegible] was allowed on the 28th of the 7th month 1811 for [illegible] and on the occasion a [illegible] capsule [illegible] the entire surface [illegible] the stated boil about two years before the child and the older sister who was long in the [illegible] had been successfully [illegible] the [illegible] mentioned the child in each instance [illegible] a vaccination at some intervening time, [illegible] had been neglected. The arms of both presented scarifications, but they under [illegible] a genuine vaccination [illegible] the [illegible] fever in the one arm

[illegible] [illegible] being seen after the [illegible] [illegible] [illegible]

almost constantly attended, and the same day a [illegible] [illegible]-

tation [illegible] [illegible] [illegible] [illegible] appeared to be

[illegible] distinct [illegible] [illegible] [illegible] [illegible], the

[illegible] and thirty [illegible] in many places [illegible],

not evidently disposed to [illegible] the distinct form, and on

the 9th day of the eruption, I was with [illegible] [illegible] gratified

to see the little sufferer sitting at the window. From this

time she recovered rapidly without [illegible] or a single

unfavourable symptom. Meanwhile the other sister, not to

[illegible] [illegible] been exposed to the Contagion at the same time,

had a slight accession of fever [illegible] [illegible] nausea, but

not followed by any apparent cutaneous affection. Similar

cases [illegible] [illegible] among the vaccinated [illegible]

exposed to the contagion. The same remark [illegible] be made

in the history of the Epidemic at other places.

In both the individuals whose cases have been

recorded, I [illegible] the disease during its [illegible] stage,

to an unmodified smallpox, [illegible] it certainly had

even characteristic exanthema, is known to the 4th day. The unprotected change which took place at that period seems to show that the unprotected vaccination was still causing or exerting some influence on the constitution so as to modify the disease into severe smallpox.

No additional evidence to the same effect I am reminded of the deplorable state found in certain cases of true vaccinia, especially, in the instances in which have occurred the spurious or irregular kind of it. Indeed, it is often impossible to induce the true vaccine disease in such individuals. On what principle can this be explained unless we admit that the spurious vaccination, so called, had a natural or original, in some instances a combined, or acquired influence on the constitutions.

On the subject of revaccination, I'll add a few observations. In the years 1828 & 1829 the Department, on all occasions, revaccinated every year, or at least twice in each month, were revaccinated in each month, and in the last part of 1829, 1830 & 1831, revaccination was again, twice,

[illegible] [illegible] that the [illegible] [illegible] [illegible]
the scars [illegible] [illegible] differed from those of genuine
vaccination only in being somewhat more uniformly circular
cicatrices, spread and genuine and [illegible] no restitution in consequence
that the virus had originally the true [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible], at different periods within
a few years revaccinated without any other effect than the
production of a special [illegible] [illegible] one of the scars that [illegible]
[illegible] [illegible] [illegible] [illegible] consisted of a thin laminated,
[illegible] the true inflection, which [illegible] [illegible], with
[illegible] [illegible] [illegible] into the arms of several vaccinated
[illegible] [illegible] [illegible] that [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible]. In 5 of the remaining 8 [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
to the frequency of the incisions made on inserting the matter
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
the [illegible] of the scarifications on the arm may have influenced the
[illegible] of the inspection.

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

spread the virulent contagion, and that we should not experience very many chickens which have been vaccinated actually die, yet we have seen the other birds, chiefly in parts of the farm not infected. These circumstances will, in a great measure, explain the fact that only one out of the hundred and one vaccinated attacked by cholera.